LOWER YELLOWSTONE GROUND-WATER RESERVATION: WATER DEVELOPMENT POTENTIAL OF BURIED-CHANNEL AQUIFERS IN RICHLAND COUNTY

EXHIBIT 1
DATE Jan 20 09
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SUBMITTED BY THE RICHLAND COUNTY CONSERVATION DISTRICT
RENEWABLE RESOURCE GRANT 2009-2010 BIENNIUM

NEED: PROJECT GOALS AND OBJECTIVES

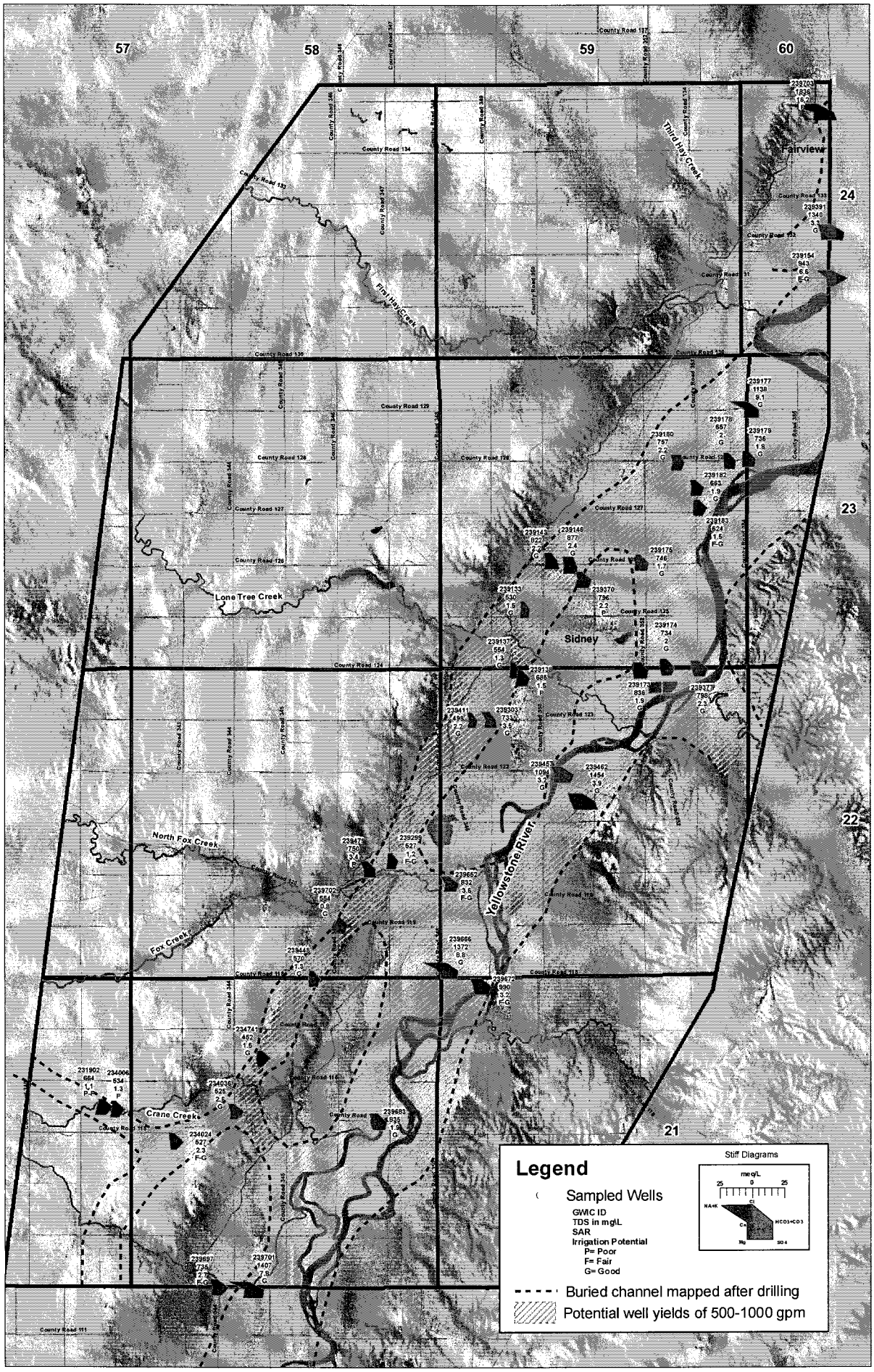
- Evaluate potential of the buried channel aquifers to supply a proposed ground-water reservation administered by the Richland County Conservation District, thereby establishing local control of managing and allocating the ground-water resources.
- Establish a monitoring network using existing wells to track impacts to the aquifer from existing and future development, and provide guidance to avoid impacts to existing water users.
- Refine internal geometry and boundaries of the aquifer system.
- Refine estimates of the total volume of water available for development and produce final maps of development potential.

KNOWN RESOURCE

- Sidney and Fairview produce water from a high-yield aquifer capable of producing from 500 to 1500 gpm from individual wells.
- Municipal wells are completed in a buried-channel aquifer that has incised into the bedrock to depths as great as 150 feet. Where mapped, the aquifer ranges from 1 to 4 miles wide.
- Aquifer is composed of up to 100 feet of water-saturated sand and gravel.
- Aquifer has been mapped in detail only in the Sidney area.
- Aquifer contains high-quality water that is excellent for irrigation purposes.
- A recently completed project identified an additional 12,000 acres of land that appears to overlie high- yield aquifers.

POTENTIAL RESOURCE

- Buried-channel aquifer from 1 to 4 miles wide by 26 to 40 miles long underlies the Yellowstone Valley through Richland County.
- Based on water–use information from Sidney it may be possible to develop up to 32,000 acre-feet of water for irrigation.
- This volume of water could irrigate 21,000 additional acres at an application rate of 18 inches/year.
- Definition and development of projected water resources could enable value-added projects such as biofuels development, malting plants, oil-field development, and coal-to-liquids development.



Water quality and aquifer development potential in the Lower Yellowstone Valley based on recently completed wells.